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-----TRANSFORMATIONS IN -----
BUSINESS & ECONOMICS

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THE COMPETITIVENESS OF HUNGARIAN UNIVERSITY-BASED KNOWLEDGE CENTRES IN EUROPEAN ECONOMIC AND HIGHER EDUCATION AREA

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ABSTRACT. *This paper focuses on the Hungarian state owned and central controlled universities, which are facing a significant transformation period. Hungarian universities, however, are still being managed and financed using methods and practices that have been inherited from the socialist times, while the competitive environment is increasingly demanding higher standards and more sophistication. The paper presents evidence and some calculations of the scenarios of Hungarian universities as knowledge-based centres. This approach is quite novel in Hungary and might meet some confronting attitudes, though this proposition should stand the test of time.*

KEYWORDS: higher education, sustainable development, knowledge-based centres, Hungary.

JEL classification: I21, Q56, P2.

Introduction

The Hungarian state owned and central controlled universities are before significant transformation. Hungarian universities, however, are still being managed and financed using methods and practices that have been inherited from socialist times, while the competitive environment is increasingly demanding higher standards and more sophistication. Government funding is declining in real terms as the state is less and less willing to foot the bill of rising operational expenses alone. This forces universities to introduce tuition fees that are determined more or less by market conditions and to exploit this source of revenue.

At the same time, however, the government assumes almost total control over the higher education sector. Student numbers increased threefold in the wake of economic transition and there is fierce competition in the labour market with employers growing ever more demanding when it comes to hiring new employees. With sustainable development increasingly gaining prominence, the prerequisites of which are – among others – the establishment and extension domestic technological capacities, universities, academic research facilities and knowledge centres are growing in importance. *Their mission* is to help the Hungarian economy to converge and to do the catching up by laying the foundations for a knowledge-based society and for the creation and promotion of industries and services that are increasingly relying on intellectual capital. Engaging and aligning with the Bologna process and reshaping our universities into knowledge centres are thus tasks that can and must not be shunned.

1. The Dimensions of Knowledge-Centres

The constant development of the factors and relations of production and thus the progress of mankind largely depend on the extent to which intellectual capital is invested in various productive activities and on the standards of such intellectual capital. More efficient production technologies, economic and productive processes yielding greater reward are beyond doubt the result of the intellectual capital invested into them. The places and focal points of the generation of such additional intellectual capital have been subject to a peculiar and incessant transformation in the course of economic history. Viewed from a historical perspective, knowledge centres furthering both social and economic development, and very often funding cultural activities as well, were basically linked to and centred around agricultural activity and the predominant forms of agricultural businesses up until the middle of the 19th century (Lentner, 2004a). Such agricultural activity was also the starting point for political changes. Knowledge centres came into being in and around agricultural businesses that depended on slave-labour and in feudal estates and manors relying solely on upon serfs and later upon agricultural day-labourers. The emergence of industrial activity, as well as the coming into prominence of mass production and the ever increasing needs of the demand-side, not to mention the integration of financial, industrial and commercial capital, brought about a massive transformation in economic life that is best characterized by the fact that by the second half of the 19th century primary production and manufacturing became the driving forces of not only economic progress but of the social and political scene as well. The foundations of this economic setup consisting of the prevalence of industrial activity on the one hand and conglomerates integrating financial, industrial and commercial capital on the other, and thus their influence upon global economic development, respectively, remained stable until the 1970s (Lentner, 2004b). The demise of the Bretton Woods system, with the US-dollar no more as stable in value as under that system, and rising fuel prices all over the globe lead to some extent to a devaluation of the significance of agricultural and industrial mass production, that was reflected in the somewhat voluntarist approach of measuring

everything in cubic metres, tons and shiploads. Instead of using only agricultural and industrial performance – and analysing only the types of businesses that used to be the backbone of such activities – as the single most important measure in determining of how developed a country is, the centre of gravity in the economy began to shift towards the tertiary sector with services and research-intensive processes growing in importance (Andrássy, 2004). Such processes lead to a quantum leap in the concentration of intellectual capital.

Such goods reflecting the prevalent standards and technologies of the era they were produced in are mainly linked to computer science, hardware manufacturing, software engineering, transportation and telecommunication to name just a few (Lentner & Farkas, 2004). As far as services are concerned we may observe quick growth in areas such as financial services, recreational and health tourism enhancing the condition of human resources, or agricultural businesses offering part time jobs. A common feature of these activities is that they require much more and higher standard intellectual capital compared to the production processes used in previous centuries. The higher education sector is at the origin of the creation of intellectual capital meeting these high expectations. Industries, services and agricultural-biotechnological firms demanding and requiring a high degree of intellectual input, setting up their operations in the vicinity of universities, constitute the driving force of global economic growth (Klugerová & Hradecký, 2006). Nowadays, when assessing the relative economic importance of a country we use products and services exhibiting a high degree of value-added that were manufactured or created by a highly qualified workforce rather than the quantity of raw materials extracted and processed.

The importance of education in general and of higher education in particular in creating a knowledge-based society that is up to the challenges of our modern age and in sustaining a balanced and high growth rate can hardly be overestimated. The major „breeding place” for skilled labour that is indispensable for producing goods that are exhibiting a high degree of value-added is higher education, which thus plays a crucial role in developing the key features of new products and technologies, in enhancing the standards of services and thus in the research and development activities underlying any innovation (Pranulis, 2004).

The way Europe is going to tackle the new and ever more complex challenges was set out by the Lisbon conference of the European Council held in March 2000. The main aims of the so-called Lisbon strategy are the following: „By 2010 Europe should be the most competitive and most dynamic knowledge-based society capable of achieving sustainable development and creating ever more and better job opportunities and a higher degree of social cohesion” (Megjelenet, 2002). Both the European Union and other developed market economies devote a great deal of attention to higher education and vocational training, to offer up-to-date knowledge and to getting more participants involved (Karnitis, 2006). The share of people taking part in some form of education, vocational training or higher education and the knowledge and skills thus acquired are key in determining how developed a given society and economy is. The quest for novelties, unearthing the driving forces of development and discovering new disciplines is being ever more strongly integrated into the system of higher education. Having been integrated, such state-of-the-art knowledge is being “processed” and passed on to the potential workforce and eventually transferred to the manufacturing and services sector to improve technical standards and enhance the usability, safety and environmental features of the goods and services and to thus induce societal and political changes in the long run (Grundey & Sarvutye, 2007).

Two thirds of research facilities in Hungary are operated by higher education institutions. Some 40 percent of researchers are employed by the higher education sector full-time. Another basic task of higher education is to prepare students enrolling in ever larger numbers for their later profession in a sound and thorough way. By training a new breed of

researchers higher education contributes to the desired broadening of research and development activities thereby simultaneously improving the standards of societal processes. In developed market economies it is becoming increasingly uncommon to stop studying after holding one's first degree, as permanent technological and economic change forces people to enrol in various forms of education or training, to take part in regular further education or even to swap professions as a consequence of economic transformations. The most intense and highest standard tasks pertaining to the training and retraining of the workforce are performed by the higher education sector.

2. Characteristics of the Hungarian System

In Hungary's transition from a planned to a market economy, the industrial sector took centre stage, where the formerly dominant heavy industry came to be superseded by industries manufacturing the latest wave of technologically more sophisticated products. Multinational firms with their greenfield investments and participation in the privatization of formerly state-owned companies have created a competitive industrial environment and structure (Kővesi *et al*, 2005). Under the new economic setup the machine industry is still playing an important role, whereas the degree of sophistication is a much higher one and technical excellence is an absolute must. A common feature, however, of post-communist countries' economic transition remains the missed opportunity to embark upon a comprehensive restructuring of the services sector that would otherwise play an even more crucial role in such countries' economies. Government funding of the higher education sector is, alas, still in short supply or at least it is not enough to cater for the increased needs of universities and colleges in the wake of a more global, more competitive and more demanding environment (Grundey & Sarvutyte, 2007). As a consequence, the output of the higher education sector – workforce that is – combined with inefficient fiscal policies has not yet contributed much in the way of creating favourable conditions for attracting high-standard direct investment exhibiting the desired properties.

Upon examining the history of knowledge-centres, which were fundamental to economic and social progress, and comparing them to the Hungarian situation it is easy to see that industrial clusters representing state-of-the-art technologies and capable of mass production have become the main driving force of economic and social change in Hungary by the end of economic transition (Lentner, 2004c; Andrásy *et al*, 2005). Beginning in the mid-1970s (essentially from the collapse of the Bretton Woods system) the USA, Western-Europe and Japan altered their respective economic setups where mass production and vertically integrated industries used to played a dominant role. They moved away from a development path driven by growth in industrial production towards one where the services sector took centre stage. The broad range of services such as transportation, electronics, tourism and health tourism, entertainment, biotechnology, communication and the software industry superseded traditional industries and their traditional organisational forms as the engine of economic growth.

Although the Hungarian version of the Soviet economic model (essentially a centralised economy) was much more lenient in many ways, it was not in a position to spark and further the development of the services sector in the desired way. At the time of economic transition the existing industries, reflecting a basically voluntarist approach, were superseded by an industrial structure representing a higher technical standard (Lentner, 2002). This technological quantum leap, however, did not entail a similar development of the services sector.

In the period between 2000 and 2003 we witnessed a change of paradigms in Hungarian fiscal policy aiming at strengthening internal resources and focusing on the

promotion of internal demand and internal supply. The so-called Széchenyi Development Scheme, funding investments among others in the tourism sector and various government initiatives to provide domestic hospitality and tourism businesses with funds, did not yield the expected reward (Higher Education, 2003). Implementing an alternative economic policy at a time of global recession and falling Hungarian exports was the right decision by the government in order to sustain a growth-rate of about 5 percent. The new scheme tried to prop up GDP-growth with measures aimed at compensating for falling exports by stimulating domestic economic activity. The other reason behind the increased funding of the services sector in general and of the tourism industry in particular was that the balance of trade and thus the balance of payments started to run even higher deficits in the wake of the 9/11 events (the institutionalised threat by terrorism and the consequential changes in world politics) than before, which needed to be balanced in some way. This policy aiming at improving the country's balance-of-payments situation brought some relief but only in the short run (*Table 1*).

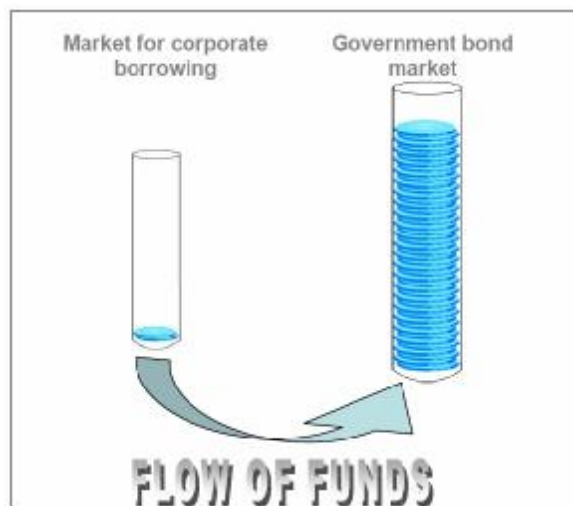
Table 1. Hungary's Main Balance of Payments Positions from 1999 to the 2nd Quarter of 2004, in Million Euros

Name	1999	2000	2001	2002	2003	2004 1 st and 2 nd Quarter
Balance of trade	- 2044	-3180	-2496	-2203	-1556	-1193
<i>Balance of services</i>	816	1207	1625	542	-202	-354
- there of Tourism, Revenue	3359	3752	4224	3448	3029	1199
<i>- there of Tourism Expenditure</i>	1450	1507	1628	1819	1788	839
<i>- Tourism Balance</i>	1909	2245	2596	1629	1241	359
Balance of Payments	-3531	-4380	-3613	-4974	-3374	-3825

Source: Hungarian National Bank, Statistics Department, 2004.

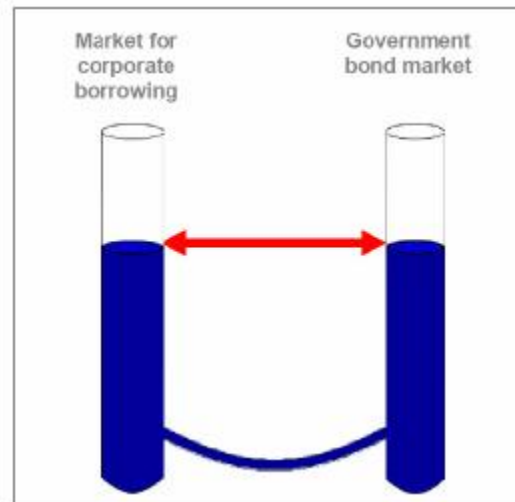
Remark: For 2005 the Ministry of Finance forecasts a balance of payments deficit between 4.6 to 4.9 billion Euros

The balance of payments, just as the budget deficit, is exhibiting negative trends year after year, so the country has to deal with a twin-deficit. The permanent character of the twin-deficit seems to be inherent to the economic setup of Hungary. What is more, the deficit – as compared to what is planned for the respective year and to prior year figures – has grown substantially both in absolute value and as in terms of GDP over the last couple of years. The weak resource allocation capability of the central budget, escalating deficits and slowing economic growth combined lead to a crowding out on the money and capital market (*Figure 1*), thus harming among others service sector enterprises, whose funding requirements go unsatisfied, as the flourishing government bond market – sparked by rising deficits and national debt – while providing a safe investment opportunity to foreign portfolio investors, is absorbing liquid bank and capital market resources (Dolton & Chung, 2004). This phenomenon that may be verified by analysing the balance sheets of commercial banks and the national bank emerged in the mid-1990s and remains an unsolved challenge putting the stability of the national economy at jeopardy. Using the analogy of communicating vessels the consolidation of the situation and achieving equilibrium between the market for corporate borrowing and the government bond market may only be the result of a longer process exhibiting elements of organic economic development (*Figure 2*).



Source: Model by Lentner (2004b).

Figure 1. The Crowding Out Effect (Current Situation)

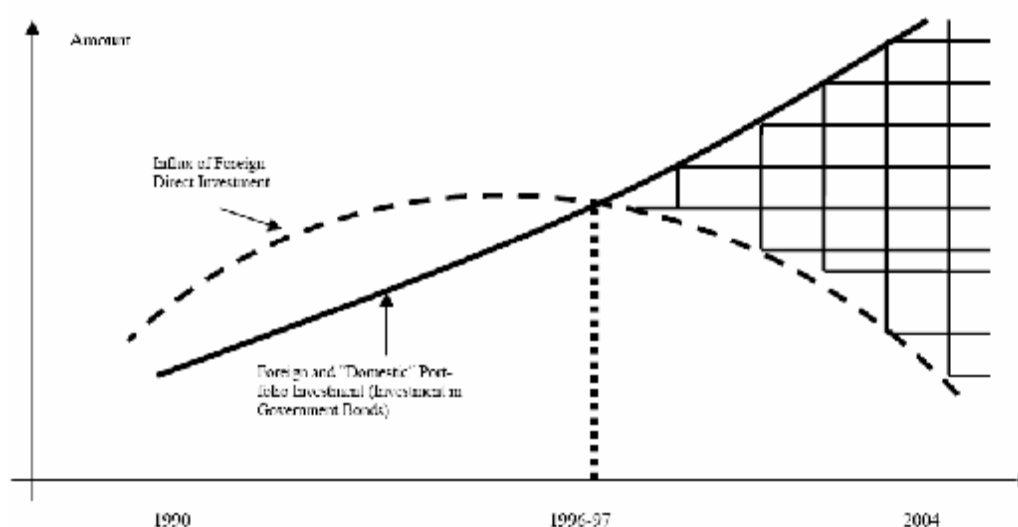


Source: Model by Lentner (2004c).

Figure 2. The Communicating Vessels Effect (Desirable Situation to be Achieved in Future)

In the course of analysing the prospects of the Hungarian human resource and public services sector (including higher education) foreign direct and portfolio investment merits further investigation. After the end of mass privatization in 1996-1997 greenfield investment and investment in the manufacturing industry that served as the foundation for economic transition started to decline. Having privatised the energy and utilities sector state-owned assets available for sale were reduced considerably.

Rising salaries and non-wage labour costs in Hungary made investors re-evaluate their decisions in the case of investments requiring a high degree of human labour input. In order to remain competitive many have chosen to leave Hungary for less developed locations with cheap labour. It is rather difficult to state exact figures as for the capital outflow from Hungary but empirical methods are at hand to provide good estimates. Further problems are stemming from the fact that at times budget and national bank mechanisms are not synchronised, leading to a sometimes unstable fiscal and monetary environment. The high deficit is sooner or later going to generate so-called new inflation. The combined effect of this, ever increasing deficits, the sudden withdrawal of national bank mechanisms from funding budgetary items, exchange-rate policies and the relatively strong Forint impairing the competitiveness of exports will lead to a depreciation of foreign direct investment in Hungary (Andrássy, 2003). The ability of foreign investments to generate yields from exports will diminish and – with the fiscal environment being as unstable as it is – so will the carrying amount of the goodwill of such investments. As a consequence, on a national level foreign direct investment in nominal terms will exceed foreign direct investment in real terms by more what we might expect based upon statistical measures. On the other hand, recurring deficits that are rising on end and are thus leading to the creation of new national debt making for a favourable environment for a booming government bond market and for portfolio investment, as opposed to declining real investment. The widening gap between the two functions (*Figure 3*) indicates primarily a fiscal deficit. Accounting for the interest charges bearing heavily upon the expenditure side of the budget it is easy to see how the government bond market diverts funds away from vital public services such as education and health care thus creating a social deficit.



Source: Lentner, 2004b, own model.

Figure 3. Empirically Approximated Functions of Portfolio (Government Bond) and Foreign Direct Investment in Hungary

The sometimes volatile and hectic nature of the Hungarian budget may shy away prospective investors pursuing long-term goals from setting up their operations here. Education, the seminal area in charge of ensuring the proper quality of the workforce and its reproduction, respectively, is particularly badly affected by the drain of funds from the public sector. It is not yet in a position to meet the demand of high-quality investments for highly qualified labour. The reproduction of the workforce using the transfer of more comprehensive and state-of-the-art knowledge is not yet available at a rate at which the development of the global economy and of the knowledge-based society require it.

The role of universities as knowledge centres in an unfavourable macro-economic environment is a crucial one. In an environment of scarce funding by the government and declining foreign direct investment the Hungarian higher education sector needs to address the new competitive challenges in an adequate way. The Hungarian higher education sector as the entirety of knowledge centres, was subject to a spectacular, however mostly extensive development. Increasing student numbers and institutional integrations have not yet yielded the desired quantum leap in quality, which would enable Hungary to join the vanguard of the global economy as far as devising and manufacturing high-standard goods and services are concerned (Lentner, 2004b). The only thing that merits positive assessment in the field of human infrastructure is that the number of students enrolling in higher education institutions increased threefold. Simultaneously, all other areas pertaining to human infrastructure in some way or another, such as day-nursery services or the consumption of “cultural goods”, are exhibiting negative tendencies. The dynamic increase in the number of students was not accompanied by appropriate additional funding.

In the year 2005, the Hungarian Government handed in the EU their presentation about reduction of budgetary deficit and public debt. The goal to cut down the deficit the competent of the EU consider appropriate moreover desirable, however the Government did not worked out the instruments regularly for attainment the purpose. Therefore the EU refused the proposal of Hungarian Government and granted a delay until September of 2006 to rework the convergence program. Reduction of the budgetary deficit is an elementary necessity of Hungarian economy but this process evident that must couple with expenditures cut down. At the same time curtail of expenditures could generate decline of expenses in the

social sector and education section. In such source revoked public finance medium the Hungarian universities like the base of knowledge based Hungarian economy could be casualty.

Choosing „new industrialization” as its centre of gravity, economic transition in Hungary neglected and could not promote a more intensive development of human infrastructure, respectively, thus losing ground relative to more developed parts of the global economy as far as competitiveness was concerned (Life-long Learning, 2004). Ever since the collapse of the Bretton Woods arrangement it has been a global trend that the development of human infrastructure is the driving force behind economic progress. The success of the American economy in creating jobs highlights that economic recovery may entail the creation of job opportunities in the private sector as well as in education, health care and social services. Well-educated and healthy workers are a real competitive force in the global competition of the 21st century. The protracted and continuing economic woes of the European Union may be traced back to the fact that all efforts taken in job creation remained more or less futile, above all in the services sector. Taking into account all these considerations it is an absolute must to invest heavily in the development of education, social services, culture and health care in the first couple decades of the 21st century. This may even entail a wave of job creation in the tertiary sector. As a consequence of such carefully implemented development strategies a new breed of workforce may emerge, who received the most modern knowledge from universities and are able to manage high-quality investments. Under the new scheme the workforce would be “maintained” by the health sector, whereby its positions on the labour market are further stabilised. As a result of the above processes there would be a workforce capable of managing and running technologically more advanced industries and services that correspond to the needs and expectations of the society.

Revisiting the empirically approximated theoretical functions of foreign direct and portfolio investment in Hungary (*Figure 3*) we may state that it is a fundamental problem that relatively smaller firms producing mainly consumer goods, which have been in Hungary for a while are relocating their activities towards places such as Eastern-Europe or the Far-East, where unskilled labour is cheaper. We may as well presume that some assembly-type operations of multinational firms, that is activities that do not depend on local suppliers and the target market of which is not Hungary, will be moved elsewhere shortly. Examples of such shutdowns include IBM and Mannesmann. In my opinion it is a matter of fact that in the period of economic transition lasting from 1987 to 2004 Hungary became a market economy governed mainly by external resources. We must not forget about the dynamism foreign direct investment brought to the Hungarian economy, what is more, we need to arrive at a new turning-point in order to lure more real investment to Hungary. Hungary is past the era of greenfield investments.

We need to establish the conditions for attracting high-quality capital investments where a stable and predictable fiscal environment and highly qualified and healthy workers are the major factor in the considerations of investors. Foreign investors are increasingly interested in buying strong and competitive domestic companies, which is a consolidating force in several industries. More and more foreign companies already settled here choose Hungary as their production base and as the centre of their research and development activities. This, however, has not yet become common practice as it is not yet an intrinsic element of economic development. By enhancing the standards and organizational features of university training and by having a more predictable fiscal environment we may create conditions favourable for luring to Hungary real investment, as well as industries and services requiring a higher degree of intellectual input.

3. Universities as Knowledge Centres

From the 1970s, we witnessed the tendency – above all in developed market economies – that universities were increasingly becoming education and research enterprises with their organisational structure and workings increasingly resembling that of companies competing on the market. In 2000, a programme aiming at the integration of higher education institutions was launched in Hungary. The *major goal* of this effort was to use infrastructure more effectively and to provide for more efficient governance. One of the most important challenges facing the higher education sector in the years to come is to seamlessly fit the integrated institutions into the European education area and to ensure the complete transformation of training cycles in order to create a more competitive higher education structure that is compatible with the higher education systems of other countries of the European Union. Integration may lead to the creation of more efficient scales, whereas engaging the higher education sector with the Bologna Process may result in the creation of more up-to-date and relevant knowledge to be conveyed to students and to the institutionalization at universities of an approach – both theoretical and practical – better fitting the technological and service industry schemes of more developed countries.

Both the European Union and the Hungarian budget are funding projects that aim at restructuring, modernising and transforming the internal training structures of universities. *The Hungarian Universitas Programme*, which may be regarded as a scheme trying to enhance the competitiveness of the Hungarian higher education sector, is promoting and supporting many initiatives that will help to boost qualitative changes, such as building new halls of residence, the modernization of existing ones and the setting up of regional university-based knowledge centres. *The Hungarian Universitas Programme* promotes the creation of world-class knowledge-centres in various sciences and specialty areas at a number of universities. The purpose of this scheme is to call into existence centres of excellence that are engaging in concentrated R & D efforts, cooperate closely with various industries and bodies in charge of innovation and to support and foster the R & D activities of enterprises. Furthermore, such centres would constitute the core of regional science clusters, taking an active role in accelerating the technological and economic development of the region and thus enhancing the country's competitive position. For further details on knowledge centres receiving government funding are now days: University of Debrecen, University of Szeged, Semmelweis University, Budapest University of Technology and Economics, University of Miskolc, University of West-Hungary.

In spite of the government funding and the funding preferences of the European Union towards the promotion of such knowledge centres it is a straightforward requirement to expose them to competition. To put it in another way, higher education institutions should become enterprises rendering educational and research services. The most efficient use of EU and domestic funds is a must but in the long run knowledge centres have to prove their viability and that they are capable of functioning on their own by putting out graduates and professionals who are competitive on the labour market, as well as by producing outstanding research results. In the long run the federal budget and the European Union would no more play a financing role in running the system but would function as regulators and authorities overseeing the market for education and research and development. It would be advisable for knowledge centres to lure external funding from the private sector during their functioning or even during the build up phase. Subsequently they should be able to generate revenues by rendering their services on the marketplace, which in turn would help integrated Hungarian universities to remain a competitive force in the long run in the European Higher Education Area.

The stated aim of the so-called Innovation Law is that research and development activities eventually result in globally marketable products and services. Thus, pursuant to the provisions of this law, the final objective of research and development is to support the Hungarian economy in its efforts to arrive at a sustainable growth path. One of the main priorities of the National Development Scheme is to help create an environment where an ever larger share of the growing gross domestic product is produced by using intellectual capital and input.

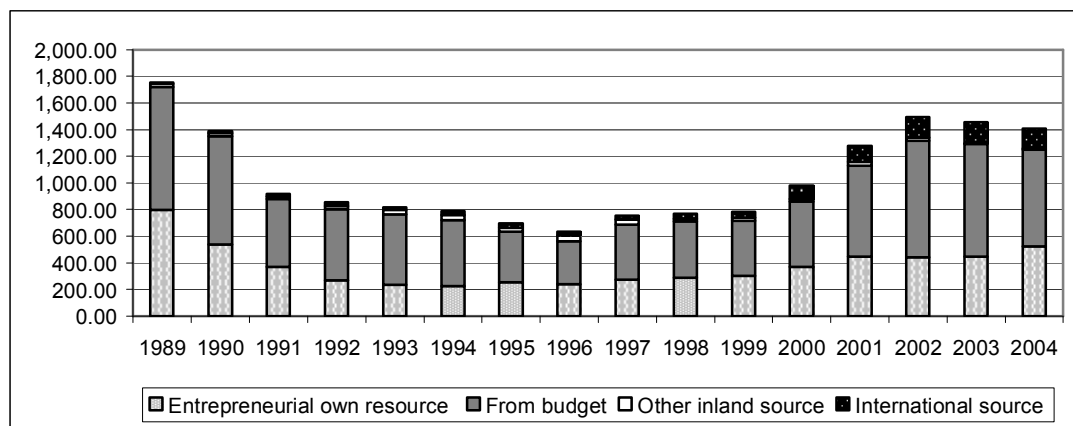
As economic transition was made possible by using mainly foreign resources, it is an inherent property of the system that technological capacities are being modernized using foreign funds. In order to find new ways of progress local knowledge that is internationally competitive has to be increasingly put to use. Universities and research facilities provide the knowledge and skills, which play an ever greater role in maintaining the competitiveness of domestic technological and productive capacities and in finding new ways of using them in a more versatile and sophisticated way, respectively. Experience from the British higher education sector shows that reform was enforced to a great extent by the fact that more and more poorly skilled workers had a hard time finding a job. At the same time an increasing number of people who graduated from universities have to take up jobs that do not require them to hold a degree. The excess supply on the labour market experienced in Great Britain is increasingly being felt in emerging Eastern European countries such as Hungary.

Another consequence of the Innovation Law is the necessity of putting together a medium-term science, technology and innovation strategy. In Hungary, establishing and strengthening the cooperation between the industry and academia and improving the innovation potential of small enterprises are strategic issues. The output of universities should closely mirror the needs of employers both as far as the number of students and their respective qualifications are concerned. Biotechnology, information and communication technology and the development of the fourth generation mobile telecom technology and networks are very promising areas. Small and medium enterprises will make their contribution by rendering software development services, for example. Policymakers hope that Hungary – along with using its geographical and logistical comparative advantage – will be able to provide an efficient mix of further local advantages, skilled professionals, a business climate favourable for innovation and knowledge-based infrastructure that will help to lure high standard foreign investments.

4. The Funding of R & D Activities

Research and development activities represent a most valuable intellectual input to businesses and are thus indispensable factors in the determination of the economic viability and competitiveness of a country. Taking a look at the R & D situation in the European Union and in the United States, respectively, we conclude that R & D expenditure in the US has been expanding at a higher annual growth rate than the European average, thus Europe is falling behind. In Hungary the situation is even worse (*Figure 4*). Due to the rising deficit and national debt the government is not in a position to provide adequate funds for R & D activities or at least not to the extent that would be justified on the grounds of the contribution of domestic R & D to economic competitiveness.

The redistribution of the so-called innovation tax, introduced in 2004, did not bring about fundamental changes in the way research and development funds can be accessed. Without ensuring the proper quality of education – providing for the human resources side of R & D activities – any expansion is unthinkable.



Source: Hungarian National Bank, Statistics Department, 2004.

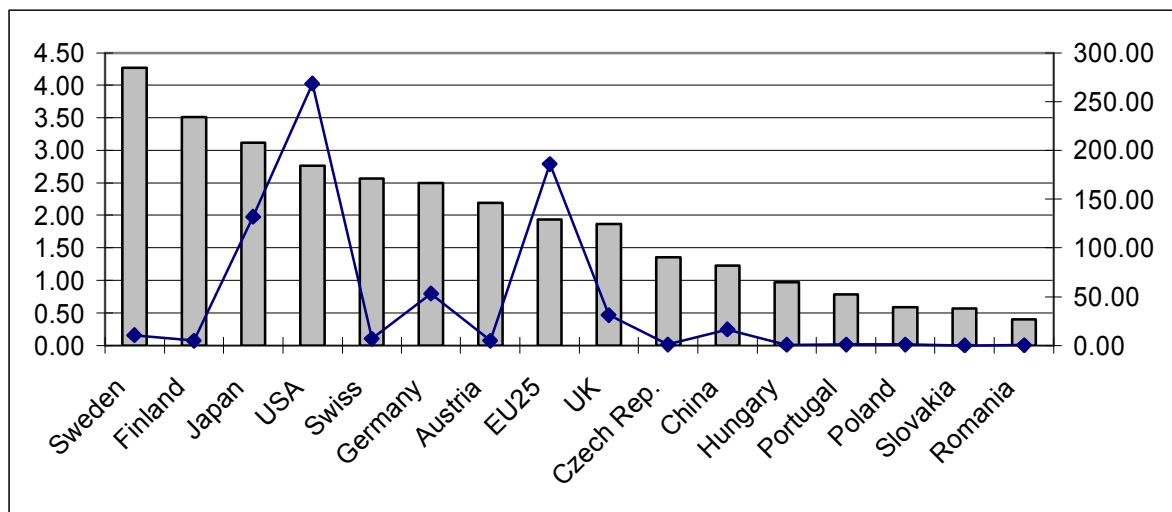
Figure 4. The Source of R&D Expenses in PPS

The liquidity problems most Hungarian universities are facing makes it difficult for them to concentrate on both R & D activities and on conveying truly high-standard knowledge to students.

On the other hand, domestic businesses are not yet endowed well enough with funds, placing a constraint on their ability – both financially and human resources-wise – to put more emphasis on their R & D activities. In industries such as the pharmaceutical industry, where research plays a crucial role, innovation has to be a key part of the strategy in order for a firm to remain competitive. In such fields Hungarian companies can only achieve a comparative advantage if they spend an even higher share of their revenue on research and development and by using the grants of the European Union more efficiently. It is imperative for the government to introduce more efficient tax schemes in order to promote companies with a strong R & D interest.

It is a question of fact that in order to remain competitive in today's globalized economic environment, the Hungarian economy has to take serious efforts to support industries and businesses that are heavily involved and dependent in R & D to enable them to contribute an even greater share to GDP. Scarce funds, however, put a constraint on the prospects of the Hungarian „knowledge industry”. The number of researchers per 1,000 employees is about half of the equivalent Western-European figure. The funding of the sector in Hungary is dwarfed by the financing received by R & D facilities in Western-Europe. In 2005 Hungary will spend a projected 0.94 percent of its GDP on R & D. This compares to 1.98 percent of the Euro zone, 2.80 percent of the United States and 3.06 percent in Japan. A ranking of European innovation indicators sees Hungary occupy 24th place. It must be mentioned though that the majority of domestic companies treat innovation expenses as part of the normal operational costs.

Based on data from 2003 a report by Ecostat, a company specialising in economic research, states the European Union spends a mere 1.93 percent of its GDP on research of development, a figure that, as we have said before, pales in comparison to the 2.76 percent of the United States and to the 3.12 percent of Japan. A glimmer of optimism, however, would be justified considering that R & D expenses rose by an average rate of 4 percent over the past four years, outstripping the respective growth rates of the US (2.2 percent) and Japan (2.7 percent). To be fair we must acknowledge, however, that R & D expenses as expressed in terms of GDP are not at all identical within the European Union itself. While Scandinavian countries represent the vanguard, it is the newly acceded countries that are spending least on R & D.



Source: EUROSTAT, 2005.

Figure 5. R&D Expenses in Terms of GDP (in billion Euro)

This is shown in *Figure 5*. In Hungary domestic R & D expenses rose by 11 percent, just like in Estonia. Slovakia and Poland too are spending more on R & D than five years ago. These tendencies affect the long-run global competitive position of both the old and the new EU member states.

The Lisbon Strategy of the European Union set the ambitious goal of making the EU the globally most competitive region of the world by 2010. In order to achieve this, 3 percent of GDP should be spent on R & D on average. The enlargement that took place in 2004 will have repercussions on the current and short-term economic competitiveness of the EU and – in conjunction with this – on its budget situation, which in turn will significantly affect the amount of expenses directed towards R & D activities.

Conclusions

The study of university-based knowledge centres and statistical data of selected foreign countries have formulated the following conclusions:

1. Because of the fossilized disturbance of state budget is expected to be a bottleneck the resource endowment in operation of Hungarian higher education, so the abashments of higher education could be fossilized.
2. Difficulties of financing enforce the marketization in the organization-governance structure of universities.
3. It is expected in medium-term the co-operation deepens between the high spiritual capital proportion claimant national sectors and searching supply of universities, leastways the universities will be forced upon from their position.
4. Probably the acceptance of experiences of market based operating universities in the EU will be outrun in the future.
5. The Hungarian universities have a key role in the alleviation of break away state of development between Hungary and 27 states of the EU.
6. If the adjustment of Hungarian convergence program effect a source distraction in the finance of education and social net than the situation of Hungarian economy will be decline on.

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ŽINIŲ CENTRŲ PRIE VENGRIJOS UNIVERSITETŲ KONKURENCINGUMAS EUROPOS EKONOMIKOS IR AUKŠTOJO MOKSLO ERDVĖJE

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SANTRAUKA

Šiame straipsnyje diskutuojama apie Vengrijos valstybinių universitetų valdymo principus, akcentuojant jų transformacijos būtinybę netolimoje ateityje. Kol kas universitetai yra kontroliuojami „iš centro“, kaip sovietų laikais, todėl pokyčiai būtini ir neišvengiami. Autorius siūlo naują žiniomis grįstų centrų kūrimo idėją, kurie būtų formuojami prie esamų universitetų, siekiant skatinti valstybinių universitetų konkurencingumą. Žiniomis grįstų centrų kūrimas prie Vengrijos universitetų – tai inovatyvi idėja, kuri gali sulaukti gan nepalankaus skeptikų vertinimo, tačiau autorius palieka tai spręsti laikui ir rinkos poreikiams.

REIKŠMINIAI ŽODŽIAI: aukštasis universitetinis išsilavinimas, darnus vystymasis, žiniomis grįsti centrai, Vengrija.